CURRICULUM VITAE ABREVIADO (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

First name	Natalia		
Family name	Calvo Fernández		
Gender (*)		Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail	nataliac@ucm.es	URL Web	
Open Researcher and Contributor ID (ORCID) (*)		0000-0001-6213-1864	

(*) Mandatory

A.1. Current position

Position	Catedrática		
Initial date	11/03/2024		
Institution	Universidad Complutense de Madrid		
Department/Center	Fisica de la Tierra y Astrofísica	Facultad de Ciencias Físicas	
Country	Spain	Teleph. number	913944523
Key words	Stratospheric dynamics, troposphere-stratosphere coupling, climate modelling		

A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
26/01/2012-10/03/2024	Titular de Universidad, Universidad Complutense de Madrid
01/10/2009-25/01/2012	Profesor Ayudante Doctor, Universidad Complutense de Madrid
04/06/2004-30/09/2009	Profesor Ayudante, Universidad Complutense de Madrid
23/06/2011- 24/01/2012	Advanced Study Program Fellowship (postdoc), NCAR, EE.UU.
01/02/2010-31/01/2011	Advanced Study Program Fellowship (postdoc), NCAR, EE.UU.
01/04/2007-31/03/2009	Postdoc MEC-Fulbright, NCAR, EE.UU
01/2003-03/06/2004	UCM Predoctoral grant.
10/2002-12/2002	EU project predoctoral grant
12/2000-10/2002	EU project, contract

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD CC. Fisicas	Universidad Complutense de Madrid	2005
Licensed CC. Fisicas	Universidad Complutense de Madrid	2000

(Include all the necessary rows)

Part B. CV SUMMARY *(max. 5000 characters, including spaces)*

I am **Professor (Catedrática)** at the Earth Physics and Astrophysics Department of Universidad Complutense de Madrid (UCM) and part of the UCM STREAM group:

(https://www.ucm.es/stream/natalia-calvo) with the highest mark (Excelente) in the latest evaluations. Within **STREAM**, I **lead the line of research on Middle Atmosphere Dynamics**, working on stratospheric dynamics, troposphere-stratosphere coupling and climate modeling, on variability and change. My PhD was pioneered on establishing the ENSO pathway in the stratosphere. ENSO as an example of troposphere-stratosphere coupling is been one of my main lines of research, with impacts on the stratospheric polar vortices, mean meridional circulation and ozone and tropospheric climate, particularly over Europe. I have also worked extensively on the mean meridional circulation of the middle atmosphere, its wave forcing, its changes under climate change and impacts on the polar vortices.

My scientific research has led to **62 peer reviewed papers** published at international JCR journals (**56 of them are Q1**), with more than 3800 citations and a **h index of 34**. It has also been disseminated at numerous international conferences and workshops, with **29 oral presentations** as first coauthor, **10 of them invited**. I have given **12 invited seminars** at top level international research centers, such as University of Berkeley in California, the U.K. Royal Meteorological Society and ETH Zurich. I am coauthor of the CCMVal2-SPARC 2010 report (Chemistry Climate Model Validation Activity), and Chapter 4 of the Scientific Assessments of Ozone Depletion from the World Meteorological Organization in 2014 (on ozone effects on climate) and 2018 (on polar ozone).

My research has a wide international component. I keep long-term highly collaborative relationship with colleagues from the Max Planck Insitute for Meteorology in Hamburg (which I visited a few times as a PhD and during my postdoctoral position) and the WACCM group at the US National Center for Atmospheric Research (NCAR), where I worked during almost 5 years as a postdoctoral researcher and I keep visiting every summer since then. I was **NCAR Affiliate Scientist**, senior level university and research community scientist, from 2016 to 2025. The internationalization of my research also resulted in my service as **President of the International Commission of the Middle Atmosphere (ICMA)**, one of the 9 commissions of the International Association of Meteorology and Atmospheric Sciences (IAMAS) part of IUGG since 2023 (former ICMA Vicepresident 2019-2023). I am also a **member of the DynVar Activity committee** (www.sparcdynvar.org), a WCRP (World climate research program) activity to understand the role of the middle atmosphere in climate by means of CMIP (Climate Model Intercomparison Project) simulations. I was also **member of the Middle Atmosphere Committee of the American Meteorological Society (AMS)** 2015-2020.

I have participated in 10 Spanish national projects in competitive calls and 2 EU projects. I have been **Principal Investigator in 5** of them (4 national, and **1 EU project FP7**). In addition, I have participated in 4 contracts with private companies, being PI in 2 of them. I also obtained personal funding: a MEC-Fulbright grant for a 2 year postdoc at NCAR, a postdoc fellowship from the NCAR Advanced Study Program, a grant from UCM for my PhD and some funding from international organizations as NATO or SPARC to attend conferences.

I supervised **7 PhD thesis** on stratospheric dynamics and troposphere-stratosphere coupling, all of them with the highest mark (Sobresaliente cum laude). I am currently supervising one more PhD student and will be supervising 1 more PhD student and 1 more postdoc starting this spring. I **supervised** more than **10 Masters Thesis (TFMs)** and was part of **8 committees to evaluate PhD thesis**, including one at ETH Zurich. My professional service to the scientific community includes reviewing numerous papers for different high-top journals such as Geophysical Research Letters, Atmospheric Chemistry and Physics or Nature and evaluating research proposals for the Agencia Nacional de Promoción Científica y Tecnológica de Argentina, and the U.S. National Science Foundation. I was a member of the Panel de Astronomía, Espacio y Ciencias de la Tierra of the Access Committee of the Barcelona Supercomputing Center (2015-2019), Chair of the Local Organizing Committees of the Dynvar workshop at UCM in 2019 and the CCMVal2 workshop in Toledo in 2009, Program Chair of the 19th Conference on the Middle Atmosphere held in Portland, USA in 2017, and member of the Scientific Organizing Committees of the SPARC Regional Workshop held in Granada in 2015 and Trends in Ourense in 2024. I participated in several outreach activities of the Science Weeks and of the Women´s and Girl's in Science Day at UCM, also hosted elementary schools visiting our Department and have given interviews to different press agencies, TV and radio stations.

Part C. RELEVANT MERITS *(sorted by typology)*

*Sexenios de investigación **4** (y uno vivo), último concedido en 2024.*
*Tesis doctorales dirigidas en los últimos 10 años **6***
Citas totales **3816** (SCOPUS)*
Publicaciones en el primer cuartil **56***
Índice h **34***

* Artículos firmado como Calvo N y Fernandez N C

C.1. Publications *(selected)*

[1] **Calvo, N**., R. R. Garcia, G. Chiodo, D. R. Marsh and L.M Polvani (2025) : On the timescales of the response of the Brewer-Dobson circulation to an abrupt quadrupling of CO_2. J. Geophys. Res. (in press).
[2] Manzini, E., B. Ayarzagüena, **N. Calvo** and D. Matei (2024): Nonlinearity and asymmetry of the ENSO stratospheric pathway to North Atlantic and Europe, revisited. *J. Geophys. Res. Atm.*, 129, doi: 10.1026/2023JD039992.
[3]Benito-Barca, S., **N. Calvo**, M. Ábalos: Driving mechanisms for the El Niño-Southern Oscillation impact on stratospheric ozone. *Atmos. Chem. Phys*., 22, 15729-15745, doi: 10.5194/acp-22-15729-2022 (2022).
[4]Abalos, M., **Calvo, N**., Benito-Barca, S., Garny, H., Hardiman, S. C., Lin, P., Andrews, M. B., Butchart, N., Garcia, R., Orbe, C., Saint-Martin, D., Watanabe, S., and Yoshida, K. (2021): The Brewer-Dobson circulation in CMIP6. Atmos. Chem. Phys., 21, 13571–13591. doi: 10.5194/acp-21-13571-2021.
[5]Ayarzaguena, B., D. Barriopedro, J.M. Garrido-Perez, M. Ábalos, A. de la Cámara, R. García-Herrera, **N. Calvo**, C. Ordoñez: Stratospheric connection to the Abrupt End of the 2016/2017 Iberian Drought. *Geophys. Res.Lett.*, 45, 12639-12646, doi: 10.1029/2018GL079802 (2018)
[6]**Calvo, N**., M. Iza, M.M Hurwitz, C. Peña-Ortiz, A.H. Butler, C. Cagnazzo, S. Ineson, C.I. Garfinkel (2017): Northern Hemisphere stratosphere pathway of different El Niño flavors in stratosphere-resolving CMIP5 models. J. Climate, 30, 12, 4351-4371.
[7] **Calvo, N**., Polvani, L.M., Solomon, S. (2015): On the surface impact of Arctic stratospheric ozone extremes. Environ. Res. Lett., 10 (9), 094003.
[8] Manzini, E., Karpechko, A.Y., Anstey, J. Baldwin, M. P., Black, R. X. Cagnazzo, C., **Calvo, N.** and coauthors (2014): Northern winter climate change: Assessment of uncertainty in CMIP5 projections related to stratosphere-troposphere coupling. J. Geophys. Res., 119, 13, 7979-7998.
[9] Cagnazzo, C., E. Manzini, **N. Calvo**, and coauthors: Northern winter stratospheric temperature and ozone responses to ENSO inferred from an ensemble of Chemistry Climate Models. *Atm. Chem. Phys.*, 9, 8935-8948, doi: 10.5194/acp-9-8935-2009 (2009).
[10] **Calvo, N.**, M. A. Giorgetta, R. Garcia-Herrera, E. Manzini: Non-linearity of the combined warm ENSO and QBO effects on the Northern Hemisphere polar vortex in MAECHAM5 simulations. *J. Geophys. Res*., 114, D13109, doi: 10.1029/ 2008JD011445 (2009). (Corrigendum, 114, D20117, 2009).

C.2. Congress.

[1] **N. Calvo**, R. R. Garcia, G. Chiodo, D. R. Marsh and L. M. Polvani: On the timescales of the Brewer-Dobson circulation response to an abrupt quadrupling of CO2 in WACCM and the role of ozone feedbacks. QUOCA workshop, November 2024, virtual. **Invited oral presenation.**
[2] **N. Calvo**, R. R. García, G. Chiodo, D. Marsh: Understanding the timescale of the response of the Brewer-Dobson circulation to climate change. IUGG Berlin, Germany, 2023. **Oral presentation.**
[3] N.Calvo, M. Iza, F. Palmeiro, B. Ayarzagüena: Advancing in Understanding the Stratospheric ENSO pathway. 27th IUGG General Assembly, Montreal, 2019. **Invited oral presentation.**
[4] N. Calvo, L. Polvani, S. Solomon: On the surface impact of Arctic ozone events. SHARP workshop, Berlin 2016. **Invited oral presentation.**
[5] N. Calvo, D. Kinnison, R. R. Garcia, D. R. Marsh: Impact of Greenhouse Gases on Stratospheric Ozone Recovery over Antarctica. SPARC Regional Workshop, Granada, Spain, 2015. **Invited oral presentation.**
[6] N. Calvo, F. Palmeiro, S. Hardiman, R. Garcia, N. Butchart: Changes in the Brewer-Dobson circulation in CMIP5 models. 12th Assembly IAGA, Merida, Mexico, August 2013. **Invited oral presentation.**

[7] N. Calvo, M. Hurwitz, M. Iza, C. Peña-Ortiz, A. Butler, S. Ineson, C. Garfinkel, E. Manzini, C. Cagnazzo: Stratospheric Role on ENSO teleconnections in CMIP5 models. 3rd SPARC DynVAR workshop, Reading, UK. April 2013. **Invited oral presentation.**
[8] **N. Calvo**: Drivers of the upwelling branch of the Brewer-Dobson Circulation. Workshop on the Brewer-Dobson circulation. Grindelwald, Switzerland, Junio 2012. **Invited Oral presentation.**
[9] **N. Calvo**, R. R. Garcia, D. R. Marsh, D. E. Kinnison, A.K. Smith: Role of ozone depletion and recovery on the SH jet and tropospheric climate in WACCM4 simulations. Second DynVAR workshop, Boulder, EE.UU, Noviembre 2010. **Invited oral presentation.**
[10] **N. Calvo**, C. Peña-Ortiz, E. Manzini, K. Matthes, W. J. Randel, L. J. Gray and the CCMVal team: The QBO signal in ozone in CCMVal2 models and observations. CCMVal2 workshop, Toronto, Canada, Junio 2009. **Invited oral presentation.**

C.3. Research projects.

[1]RETO-PV (Reducing the Uncertainty in projections of the Northern Hemisphere stratospheric polar vortex). Ministerio de Ciencia, Innovación y Universidades. Proyectos de Generación de Conocimiento 2024. IP. 2025-2027.
[2]RECOVERY (Stratospheric Ozone recovery in the Northern Hemisphere under climate change) Ministerio de Ciencia e Innovación. Proyectos de Generación de Conocimiento 2021. 12000 €. **IP.** 2022-2024.
[3]JEDIS (Jet Dynamics and extremeS). MICINN (Ministerio de Ciencia, Innovación y Universidades). Proyectos de I+D+I Retos de la Sociedad 2018. 120000 €. Researcher (Influence of the polar vortex as a driver on the dynamics of the jet stream). 2019-2021.
[4] PALEOSTRAT (PALEOmodelling from a STRATospheric perspective) CGL2015-69699. MINECO (Ministerio de Economía y Competitividad). Proyectos de I+D+I Retos de la Sociedad 2015. 115.000 €. **Co-PI**. 2016-2020.
[5] StratoClim (STRATOspheric and upper tropospheric processes for better CLIMate predictions) Ref. 603557. European Commission, FP7: 145.352 €. **PI**. 2014-2018
[6] MATRES (Mecanismos y Variabilidad del Acoplamiento TRoposfera-EStratosfera) CGL2012-34221. MINECO (Ministerio de Economía y Competitividad).: 84.600 €. Researcher (troposphere-stratosphere coupling during ENSO events). 2013-2015.
[7] Supercomputing and e-Science CSD 2007-00050.: MEC, CONSOLIDER. 102.000. Researcher. 2007-2011 (supercomputing for global climate models).
[8] TRODIM (DIagnosis and Modelization of the extratropical TROpopause). CGL2007-65891-C-05-02. MEC 153.670 €. **PI**. 2007-2010
[9] Modelización de las fuentes de humedad en la región mediterránea en diferentes escerarios de cambio climático. Ministerio Educación y Ciencia. CGL2008-05968-C02-01. 130.000€. Researcher . 2009-2011. (Analysis of backtrajectories).
[10] VALIMOD (Climatic validation of conceptual models at synoptic scales, compatibility with quasistationary circulation regimes, and effects on the weather of the Iberian Peninsula),Spanish Ministry of Education and Science , Researcher (analysis of quasi stationary waves and wave mean flow interadctions). 2002-2005.
[11] CLIWOC (*Climatological Database for the World's Oceans 1750-1850)*, European Union Project (www.ucm.es/info/cliwoc), Researcher (working on creating the database from logbooks and analysis of wind data). 2000-2003.

C.4. Contracts, technological or transfer merits.

[1] Estudio de teleconexiones climáticas en campos eólicos. FASAE II Iberola Renovables. **Principal Investigator** (2014-2016). 27000 €.
[2] Estudio de teleconexiones climáticas en campos eólicos. Iberdrola Renovables. **Principal Investigator** (2012-2014). 25000 €.

Fecha del CVA	24/02/2026

Parte A. DATOS PERSONALES

Nombre	Cristina		
Apellidos	Peña Ortiz		
Sexo		Fecha de Nacimiento	
DNI/NIE/Pasaporte			
URL Web			
Dirección Email	cpenort@upo.es		
Open Researcher and Contributor ID (ORCID)	0000-0002-5451-8521		

A.1. Situación profesional actual

Puesto	Profesora Titular		
Fecha inicio	2020		
Organismo / Institución	Universidad Pablo de Olavide		
Departamento / Centro	Departamento de sistemas físicos, químicos y naturales / Facultad de Ciencias Experimentales		
País		Teléfono	
Palabras clave			

A.3. Formación académica

Grado/Master/Tesis	Universidad / País	Año
Astrofísica y Ciencias de la Atmósfera del Departamento de Física de la Tierra, Astronomía y Astrofísica II.	Universidad Complutense de Madrid / España	2006
Licenciado en Ciencias Física	Universidad Complutense de Madrid	2002

Parte B. RESUMEN DEL CV

Tras licenciarme en Ciencias Físicas por la Universidad Complutense de Madrid en 2002 obtuve mi doctorado 2006 en la misma universidad y en estudios sobre la variabilidad climática de la estratosfera asociada a la Oscilación Cuasi-Bienal (QBO). Esta línea de trabajo se ha prolongado a lo largo de mi trayectoria investigadora, incorporando el análisis del papel de la estratosfera en la dinámica de la mesosfera tropical y en los mecanismos de acoplamiento entre la troposfera y la estratosfera.

He participado en 12 proyectos competitivos, siendo investigadora principal en tres: VABES (Variabilidad del vapor de agua en la baja estratosfera) y VORTEX (El papel del vórtice polar en la predictibilidad de eventos extremos), financiados por el Plan Nacional de I+D+i e ISIpedia (ISIpedia: the open climate-impacts encyclopedia), en el marco del programa ERA4CS de la Unión Europea. Estas iniciativas me han permitido abrir nuevas líneas de investigación en olas de calor y mortalidad, transporte de vapor de agua, teleconexiones climáticas e impactos de los extremos atmosféricos en estrecha colaboración con centros internacionales como el NCAR (EE.UU.), el Max Planck Institute

for Meteorology (Alemania), Institute of Climate and Energy Systems (Alemania) o el LMD/IPSL (Francia).
Soy autora de 36 publicaciones científicas, de las que 29 son artículos se encuentran en revistas JCR de primer cuartil, y cuento con tres sexenios de investigación (3/3). Mi producción científica se ha difundido también a través de capítulos de libro, informes técnicos y numerosas presentaciones en congresos internacionales.
En el ámbito docente, desde 2006 he impartido alrededor de 2668 horas de docencia universitaria, con experiencia en todos los niveles: grado, máster y doctorado, habiendo obtenido tres quinquenios docentes. En el Grado en Ciencias Ambientales (UPO) he impartido asignaturas de carácter obligatorio como Meteorología y Climatología, Cambio Global y Optimización Energética y Energías Renovables, de la he sido coordinadora desde su implantación en 2011, y optativo como Ruido y Contaminación además de tutelar más de 20 Trabajos Fin de Grado. En posgrado he participado en másteres interuniversitarios como el de Ciencias del Clima (UVigo) o el de Cambio Climático, Carbono y Recursos Hídricos (UPO), impartiendo asignaturas especializadas en análisis de series temporales y modelización y escenarios de cambio climático. También he dirigido dos tesis doctorales, contribuyendo a la formación de investigadores en el ámbito de la climatología. Mi compromiso con la innovación docente, materializado en la participación en diversos proyectos y cursos, ha contribuido a obtener valoraciones positivas del alumnado (media de 4,23/5 considerando las 16 ecuestas en las que la participación fue superior al 10% de los estudiantes matriculados) y a mantener altas tasas de éxito académico.
En el ámbito de la gestión universitaria, he ocupado dos cargos unipersonales: Secretaria del Departamento de Sistemas Físicos, Químicos y Naturales (2015–2020) y posteriormente Directora del mismo (2020–2024), afrontando retos como la adaptación docente e investigadora durante la pandemia.
De esta manera, mi trayectoria se caracteriza por la integración equilibrada de investigación, docencia y gestión académica, en un contexto de colaboración internacional consolidada y con aportaciones significativas a la actividad científica, la formación del alumnado y la gestión universitaria.

Parte C. LISTADO DE APORTACIONES MÁS RELEVANTES

C.1. Publicaciones más importantes en libros y revistas con “peer review” y conferencias

AC: Autor de correspondencia; (n° x / n° y): posición firma solicitante / total autores. Si aplica, indique el número de citaciones

1 Artículo científico. Gallego, David; Garcia-Herrera, Ricardo; Tomety, Folly Serge; alvarez-Castro, M. Carmen; (5/5) Pena-Ortiz, Cristina. 2025. Historical record of upwelling-favorable winds in Southern Benguela 1833-2014. NPJ Climate and Atmospheric Science. NATURE PORTFOLIO. 8-36. ISSN 2397-3722. https://doi.org/10.1038/s41612-025-00925-0

2 Artículo científico. Wang, H.; Park, M.; Tao, M.; (4/7) Peña-Ortiz, C.; Pilar Plaza, N.; Ploeger, F.; Konopka, P.2025. Understanding Boreal Summer UTLS Water Vapor Variations in Monsoon Regions: A Lagrangian Perspective (Aceptado para su publicación en ACP).

Atmospheric Chemistry and Physics. European Geosciences Union. ISSN 1680-7316. https://doi.org/10.5194/egusphere-2024-3260

3 Artículo científico. Karen de los Ríos; Paulina Ordoñez; Gabriele Stiller; Marco Gal; Piera Raspollini; Kaley Walker; (7/8) Cristina Peña Ortiz; Luis Acosta. 2024. Comparison of the H2O, HDO and δD stratospheric climatologies between the MIPAS-ESA V8, MIPAS-IMK V5 and ACE-FTS V4.1/4.2 satellite datasets. Atmospheric Measurement Techniques (AMT). EGU. 17, pp.3401-3418. ISSN 1867-1381. https://doi.org/10.5194/amt-17-3401-2024

4 Artículo científico. (1/4) Cristina Peña Ortiz (AC); Nuria Pilar Plaza Martín; Felix Ploeger; David Gallego Puyol. 2024. Quasi-biennial oscillation modulation of stratospheric water vapour in the Asian monsoon. Atmospheric Chemistry and Physics. EGU. 24, pp.5457-5478. ISSN 1680-7316. https://doi.org/10.5194/acp-24-5457-2024

5 Artículo científico. Safae; Cristina; Naoufal. 2024. Comparative Analysis of Summer Discomfort Index and Thermal Sensation Vote Using Remote Sensing Data in the Summer: A Case Study of the Mediterranean Cities Seville, Barcelona, and Tetuan. Environmental Sciences Proceedings. MDPI Open Access Journals.

6 Artículo científico. Huber V.; Peña-Ortiz C.; Gallego. D; Sera F.; Lange S.2022. Evidence of rapid adaptation integrated into projections of temperature-related excess mortality. Environmental Research Letters.

7 Artículo científico. Nuria Pilar Plaza; Aurélien Podglajen; Cristina Peña-Ortiz; Felix Ploeger. 2021. Processes influencing lower stratospheric water vapour in monsoon anticyclones: insights from Lagrangian modelling. Atmospheric Chemistry and Physics. COPERNICUS GESELLSCHAFT MBH. 21, pp.9585-9607. ISSN 1680-7316.

8 Artículo científico. Ana E. Melgarejo; Paulina Ordoñez; Raquel Nieto; Cristina Peña-Ortiz; Ricardo García-Herrera; Luis Gimeno. 2021. Mechanisms for Severe Drought Occurrence in the Balsas River Basin (Mexico). Atmosphere. MDPI. ISSN 2073-4433.

9 Artículo científico. Pedro Ribera Rodríguez; Paulina Ordoñez; David Gallego Puyol; Cristina Peña Ortiz. 2020. Internal variability and external forcings in the ocean–atmosphere multidecadal oscillator over the North Atlantic. Climate Dynamics. Springer. 55, pp.909-953. ISSN 0930-7575.

10 Artículo científico. Veronika Huber; Linda Krummenauer; Cristina Peña Ortiz; Stefan Lange; Antonio Gasparini; Ana M. Vicedo Cabrera; Ricardo García Herrera; Katja Frieler. 2020. Temperature-related excess mortality in German cities at 2 °C and higher degrees of global warming. Environmental Research. Elsevier. 186. ISSN 0013-9351.

11 Artículo científico. Cristina Peña Ortiz; Elisa Manzini; Marco Giorgetta. 2019. Tropical Deep Convection Impact on Southern Winter Stationary Waves and Its Modulation by the Quasi-Biennial Oscillation. Journal of Climate. AMS. 32-21. ISSN 0894-8755.

12 Artículo científico. Francisco Gómez Delgado; David Gallego Puyol; Cristina Peña Ortiz; Inmaculada Vega; Pedro Ribera Rodríguez. 2019. Long term variability of the northerly winds over the Eastern Mediterranean as seen from historical wind observations. Global and Planetary Change. Elsevier. 172, pp.355-364. ISSN 0921-8181.

13 Artículo científico. Vega I.; Gallego D.; Ribera P.; F. de Paula Gómez-Delgado; García-Herrera R.; Peña-Ortiz C.2018. Reconstructing

the Western North Pacific Summer Monsoon since the Late Nineteenth Century. Journal of Climate. American Meteorological Society. 31, pp.355-368. ISSN 0894-8755.

14 Artículo científico. Gallego D.; García-Herrera R.; Peña-Ortiz C.; Ribera P.2017. The steady enhancement of the Australian Summer Monsoon in the last 200 years. Scientific Reports. Nature Publishing Group. 7. ISSN 2045-2322.

15 Artículo científico. N. Calvo; M.Iza; M.M. Hurwitz; et al; C.I. Garfinkel. 2017. Northern Hemisphere Stratospheric Pathway of Different El Niño Flavors in Stratosphere-Resolving CMIP5 Models. Journal of Climate. AMS. ISSN 0894-8755.

16 Artículo científico. Ordoñez P.; Ribera P.; Gallego D.; Peña-Ortiz C.2016. Tracking the Indian Summer Monsoon Onset Back to the Preinstrument Period. Journal of Climate. 29-22, pp.8115-8127. ISSN 0894-8755.

17 Artículo científico. Gallego D.; Ordonez P.; Ribera P.; Pena-Ortiz C.; Garcia-Herrera R.2015. An instrumental index of the West African Monsoon back to the nineteenth century. QUARTERLY JOURNAL OF THE ROYAL METEOROLOGICAL SOCIETY. WILEY-BLACKWELL, 111 RIVER ST, HOBOKEN 07030-5774, NJ USA. 114-693, pp.3166-3176. ISSN 0035-9009.

18 Artículo científico. Pena-Ortiz C.; Barriopedro, D.; Garcia-Herrera, R.2015. Multidecadal Variability of the Summer Length in Europe. Journal of Climate. AMER METEOROLOGICAL SOC, 45 BEACON ST, BOSTON, MA 02108-3693 USA. 28-13, pp.5375-5388DOI: 10.1175/JCLI-D-14-00429.1. ISSN 0894-8755.

19 Artículo científico. Hurwitz, MM; Calvo, N; Garfinkel, CI; Butler, AH; Ineson, S; Cagnazzo, C; Manzini, E; Pena-Ortiz, C. 2014. Extra-tropical atmospheric response to ENSO in the CMIP5 models. CLIMATE DYNAMICS. SPRINGER, 233 SPRING ST, NEW YORK, NY 10013 USA. 43-12, pp.3367-3376. ISSN 0930-7575.

20 Artículo científico. (1/5) Pena-Ortiz C.; Gallego D.; Ribera P.; Ordonez P.; Álvarez-Castro MD. 2013. Observed trends in the global jet stream characteristics during the second half of the 20th century. JOURNAL OF GEOPHYSICAL RESEARCH-ATMOSPHERES. AMERICAN GEOPHYSICAL UNION. 118, pp.2702-2713. ISSN 2169-897X.

21 Artículo científico. David Barriopedro Cepero; David Gallego Puyol; María del Carmen Álvarez Castro; Ricardo García Herrera; Dennis Wheeler; (6/7) Cristina Peña Ortiz; Susana Barbosa. 2013. Witnessing North Atlantic westerlies variability from ships' logbooks (1685–2008). Climate Dynamics. Springer. ISSN 0930-7575.

22 Artículo científico. Ordoñez P.; Ribera P.; Gallego D.; Pena-Ortiz C.2012. Major moisture sources for Western and Southern India and their role on synoptic scale rainfall events (aceptado). Hydrological Processes. WILEY-BLACKWELL. ISSN 0885-6087.

23 Capítulo de libro. R. Serrano-Notivoli; (2/3) C. Peña-Ortiz (AC); R. Nieto. 2024. VARIABLES ATMOSFÉRICAS EN ESPAÑA DURANTE EL PERIODO OBSERVACIONAL: VARIABILIDAD, TENDENCIAS Y MECANISMOS DE CIRCULACIÓN ASOCIADOS. CAPÍTULO 3 DEL INFORME CLIVAR-SPAIN SOBRE EL CLIMA EN ESPAÑA. MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA Y EL RETO DEMOGRÁFICO. ISBN 978-84-18778-46-9.

C.3. Proyectos o líneas de investigación

1 Proyecto. EL PAPEL DEL VORTICE POLAR EN LA PREDICTIBILIDAD DE EVENTOS EXTREMOS EN EL HEMISFERIO NORTE PID2023-150798NB-I00. CENTRO DE ACUSTICA APLICADA Y EVALUACION NO DESTRUCTIVA. Cristina Peña Ortiz. (Universidad Pablo de Olavide). 01/09/2024-31/08/2027. 183.750 €.

2 Proyecto. PCIN-2017-046, Enciclopedia libre de los impactos climáticos intersectoriales. ERA4CS (European Research Area for Climate Services, Grant 690462) y Proyectos de I+D+i de Programación Conjunta Internacional del Plan Estatal. Cristina Peña Ortiz. (Universidad Pablo de Olavide). 15/09/2017-28/02/2021. 75.200 €. Participé como miembro del equipo de investigación del proyecto "Enciclopedia libre de los impactos climáticos intersectoriales" (PCIN-2017-046, ISIpedia), financiado en el marco del programa ERA4CS ...

3 Proyecto. CGL2016-78562-P, Variabilidad del vapor de agua en la baja estratosfera. Programa Estatal de Fomento de la Investigación Científica y Técnica de Excelencia. David Gallego Puyol. (Universidad Pablo de Olavide). 30/12/201629/12/2020. 136.730 €. Como miembro del equipo investigador del proyecto "Variabilidad del vapor de agua en la baja estratosfera" (VABES, CGL2016-78562-P), financiado en el marco del Programa Estatal de Fomento de la Inve...

4 Proyecto. CGL2013-44530-P, Nueva Generación de Índices Climáticos Instrumentales. Aplicación al Estudio de la Teleconexión Monzón-Mediterráneo. Ministerio de Economía y Competitividad. David Gallego Puyol. (Universidad Pablo de Olavide). 01/01/201431/12/2017. 103.100 €. Miembro de equipo. Participé como miembro del equipo investigador en el proyecto "Nueva generación de índices climáticos instrumentales. Aplicación al estudio de la teleconexión monzón-Mediterráneo" (CGL2013-44530-P), ...

5 Proyecto. CGL2012-34221, Mecanismos de modulación del Acoplamiento Troposfera-Estratosfera. Ministerio de Economía y Competitividad. David Barriopedro Cepero. (Universidad Complutense de Madrid). 01/01/2013-31/12/2015. 74.000 €. Miembro de equipo. Como miembro del equipo investigador del proyecto "Mecanismos y variabilidad del acoplamiento troposfera-estratosfera" (MATRES, CGL2012-34221), financiado en el marco del Plan Nacional de I+D+i dentr...

6 Proyecto. Diagnosis of the northern hemisphere jet stream: a new perspective from tropopause maps.. Ministerio de Ciencia e Innovación. David Gallego Puyol. (Universidad Pablo de Olavide). 01/01/2008-31/12/2009. 8.500 €. Miembro de equipo.

MINISTERIO DE CIENCIA E INNOVACIÓN

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CURRICULUM VITAE

Part A. PERSONAL INFORMATION

CV date	19.01.2026

First name	Luis		
Family name	Gimeno		
Gender (*)	[redacted]		[redacted]
Social Security, Passport, ID number	[redacted]		
e-mail	l.gimeno@uvigo.es	URL Web https://ephyslab.uvigo.es/en/dr-luis-gimeno-3/	
Open Researcher and Contributor ID (ORCID) (*)		https://orcid.org/0000-0002-0778-3605	

A.1. Current position

Position	Full Professor of Atmospheric Physics			
Initial date	15th July 2009			
Institution	University of Vigo			
Department/Center	Applied Physics	Faculty of Sciences		
Country	Spain		Teleph. number	988387208
Key words	Atmospheric Physics, Hydrological Cycle, Climate Diagnosis			

A.2. Previous positions (research activity interuptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
1997-2009	Associate professor/University of Vigo/Spain/Promotion to professor
1991-1997	Meteorologist/Spanish weather Service/Spain/Change of activity

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD (Atmospheric Physics)	Complutense University	1994
Bachelor	Complutense University	1990

5 (five) SEXENIOS of research and 1 (one) of transference

Part B. CV SUMMARY *(max. 5000 characters, including spaces)*

Professor Gimeno is originally from Madrid, and is 58 years old. He has a PhD in Earth Sciences and is cur
He belongs to Ephyslab, a research group integrated in the CIM (Marine Research Center), a unique research centre located in Galicia. He was the ANEP (Spanish Agency) coordinator of Earth Sciences and President of the Specialist Group focusing on the Physics of the Atmosphere and Ocean for the Royal Spanish Society of Physics. He created the first official Master's and PhD programmes in Spain dedicated to climate science, into which researchers from more than a dozen countries have been installed as professors

Professor Gimeno is well known as a world leader in research on the water cycle and how this is affected by climate change. His pioneering studies on the main sources of moisture for precipitation over the continents serve as the basis for the interpretation of observed and modelled changes for future climates. A principal investigator on more than 30 research projects, he has published more than 300 articles in international high impact scientific journals. The importance of his research has led to invitations from the most prestigious review journals to synthesize advances on the hydrological cycle, as the only researcher in the world to write invited feature articles by all the major journals in the field: Reviews of Geophysics, Annual Reviews of Environment and Resources, Earth Science Reviews, WIRES Climate Change, WIRES Water and Nature Reviews and Environment. He has developed extensive programmes related to the organization of international conferences and the hosting of international researchers, has been a member of 16 editorial committees of SCI journals, has edited 22 Special Issues for journals, has been funded with 75 Extramural Research Projects and has supervised 18 doctoral students

Over the last decade, his research has focused on the atmospheric branch of the hydrological cycle, and it is in this area that he has achieved particular international renown. The year 2010 saw the publication in Geophysical Research Letters of an article entitled "On the origin of Continental Precipitation", which had an extraordinary impact from the moment it was published – this was highlighted by the journal itself, on the cover of EOS, the journal of the American Geophysical Union, and the article is regularly considered as “highly cited” by WoS. Its summary figure is widely used in basic university textbooks on Meteorology and Climatology. This article was followed by a succession of more than 100 outputs that identified the main global and regional sources and sinks of moisture. On the strength of this, the American Geophysical Union invited him to synthesize the existing state of knowledge on moisture sources of continental precipitation in an article published in 2012 in Reviews of Geophysics entitled "Oceanic and Terrestrial sources of continental precipitation," which like the previous one is also considered "highly cited" by WoS

A key consideration within these studies is the analysis of the role played by the main mechanisms of moisture transport, such as Atmospheric Rivers and Low level Jets in the genesis and maintenance of extreme precipitation events, mainly through droughts and floods. These discoveries were revealed to the scientific community in specialist journals. These breakthroughs were also seen in the prestigious Annual Reviews series through the Annual Reviews of Environment and Resources, who invited him to publish a review of all these findings in 2016, entitled "Major Mechanisms of Atmospheric Moisture Transport and Their Role in Extreme Precipitation Events", also considered "highly cited" by WoS. In 2016, he organized a major international conference in Ourense in the Leonardo Conference of the EGU, "From Evaporation to precipitation: atmospheric moisture transport", which attracted the world's leading researchers to the city

These days he is engaged in ongoing research on fundamental aspects of the hydrological cycle and its climatic implications, addressing essential questions related to climate change, such as (i) whether climate change implies an increase in oceanic-versus-terrestrial precipitation (article published in 2020 in *Nature npj Climate and Atmospheric Sciences*, entitled "The growing importance of oceanic moisture sources for continental precipitation"), ii) whether atmospheric rivers are transporting increasing amounts of moisture and whether this is congruent with basic thermodynamic principles linked to climate change (article published in *2020 in Nature Communications* entitled "Significant increase of global anomalous moisture uptake feeding landfalling Atmospheric Rivers") iii) the role of the residence time of water vapour in the atmosphere as a metric of the global hydrological cycle and its implications in the study of climate change (article published in *2021 in Nature Reviews Earth and Environment* entitled "The Residence Time of Water Vapour in the Atmosphere"), iv) the role of the vegetation in modulating changes in precipitation (article published in *2022 in Nature Geoscience* entitled "Global water availability boosted by vegetation-driven changes in atmospheric moisture transport", the changes in moisture transport associated to climate change (article published in *2023 in Nature Communications*, entitled "Projected changes in atmospheric moisture transport contributions associated with climate warming in the North Atlantic") or vi) the role of moisture transport deficit in drought genesis (article published in *2024 in Nature Water* entitled "Unravelling the origin of the atmospheric moisture deficit that leads to droughts").

Part C. RELEVANT MERITS *(sorted by typology)*

C.1. Publications (More than 310 SCI papers, more than 230 Q1, Full list of publications link https://ephyslab.uvigo.es/dr-luis-gimeno/Publication)

12 SELECTED PUBLICATIONS

- Vicente-Serrano, S.M., Tramblay, Y., Reig, F. et al, including **Gimeno L.. High temporal variability not trend dominates Mediterranean precipitation**. *Nature* (2025). https://doi.org/10.1038/s41586-024-08576-6
- Gimeno-Sotelo, L., Sorí, R., Nieto, R., Vicente-Serrano S. and **Gimeno L**. (2024). **Unravelling the origin of the atmospheric moisture deficit that leads to droughts.** *Nature Water* (2024). https://doi.org/10.1038/s44221-023-00192-4
- Fernández-Alvarez, J.C., Pérez-Alarcón, A., Eiras-Barca, J. Rahimi, S, Nieto, R. and **Gimeno, L. Projected changes in atmospheric moisture transport contributions associated with climate warming in the North Atlantic.** *Nature Commun* 14, 6476 (2023). https://doi.org/10.1038/s41467-023-41915-1
- J. Cui, X. Lian, C. Huntingford, **L. Gimeno**, T. Wang, J. Ding, M. He, H. Xu, A. Chen, P. Gentine, S. Piao (2022) **Global water availability boosted by vegetation-driven changes in atmospheric moisture transport**, *Nature Geoscience*, DOI: 10.1038/s41561-022-01061-7
- **L. Gimeno,** J. Eiras-Barca, A.M. Durán-Quesada, F. Domínguez, R. van der Ent, H. Sodemann, R. Sánchez-Murillo, R. Nieto, J. W. Kirchner (2021) **The residence time of water vapour in the atmosphere**, *Nature Reviews Earth & Environment,* doi: 10.1038/s43017-021-00181-9 BY INVITATION
- Algarra, R. Nieto, A.M. Ramos, J. Eiras-Barca, R.M. Trigo, **L. Gimeno** (2020) **Significant increase of global anomalous moisture uptake feeding landfalling Atmospheric Rivers**, *Nature Communications, Vol. 11,5082 (2020).DOI: https://doi.org/10.1038/s41467-020-18876-w*
- **L. Gimeno,** R. Nieto, R. Sorí (2020) **The growing importance of oceanic moisture sources for continental precipitation**, *npj Climate and Atmospheric Science, Vol. 3, Article number: 27 (2020), DOI: https://doi.org/10.1038/s41612-020-00133-y*
- **L. Gimeno,** M. Vázquez, J. Eiras-Barca, R. Sorí, M. Stojanovic, I. Algarra, R. Nieto, A.M. Ramos, A.M. Durán-Quesada, F. Dominguez (2020) **Recent progress on the sources of continental precipitation as revealed by moisture transport analysis**, *Earth Science Reviews, Vol. 201, February 2020, 103070; p: 1-25 DOI: https://doi.org/10.1016/j.earscirev.2019.103070* BY INVITATION
- **L. Gimeno,** M. Vázquez, J. Eiras-Barca, R. Sorí, I. Algarra, R. Nieto (2019) **Atmospheric moisture transport and the decline in Arctic Sea ice**, *Wiley Interdisciplinary Reviews-Climate Change, May, Pages 1-12 DOI: https://doi.org/10.1002/wcc.588* BY INVITATION
- J. A. Collins, M. Prange, T. Caley, **L. Gimeno,** B. Beckmann, S. Mulitza, C. Skonieczny, D. Roche, E. Schefuß (2017) **Rapid termination of the African Humid Period triggered by northern high-latitude cooling**, *Nature Communications, 8, doi:10.1038/s41467-017-01454*
- **L. Gimeno,** F. Dominguez, R. Nieto, R.M. Trigo, A. Drumond, C. Reason, A.S. Taschetto, A.M. Ramos, R. Kumar, J. Marengo (2016) **Major Mechanisms of Atmospheric Moisture Transport and Their Role in Extreme Precipitation Events,** *Annual Review of Environment and Resources, 2016. 41:117–41, doi: 10.1146/annurev-environ-110615-085558* BY INVITATION
- **L. Gimeno,** A. Stohl, R.M. Trigo, F. Domínguez, K. Yoshimura, L. Yu, A. Drumond, A.M. Durán-Quesada, R. Nieto (2012) **Oceanic Sources of Continental Precipitation**, *Reviews of Geophysics* doi:10.1029/2012RG000389 BY INVITATION (ISI highly cited article)

C.2. Congress (More than 300 presentations in international congress -many of them as invited speaker- including annual assemblies of the AMS, AGU, EGU and EMS)

Convener EGU Assembly 2021 The atmospheric water cycle under change: feedbacks, land use, hydrological changes and implications. Vienna, Austria 19-30 April, 2021. *Convener* EGU Assembly 2018. Session The atmospheric water cycle: feedbacks, management, land-use and climate change. Vienna, Austria 8-13 April, 2018. *Chair* First electronic conference on the hydrological cycle, 12-16 November, 2017. *Organizing Committee* The 2nd International Electronic Conference on Atmospheric Sciences, 15-30 July 2017. *Chair* 2016 EGU Leonardo conference on the hydrological

cycle: From evaporation to precipitation: the atmospheric moisture transport Ourense, Spain, 25-27 October 2016 *Organizing Committee.* The 2nd International Congress on Water: Floods and Drought. Ourense, Spain, 27-28 October, 2016. *Organizing Committee* The 1st International Electronic Conference on Atmospheric Sciences, 15-30 July 2016. *Organizing Committee* 2014 11th International conference on southern hemisphere meteorology and oceanography ICSHMO, Santiago de Chile, 5-9 October, 2015. *Organizing Committee* 2014 SPARC Regional Workshop, Role of the stratosphere in climate variability and prediction, Granada, Spain, 12-13 January 2015. *Organizing Committee.* 10th International conference on southern hemisphere meteorology and oceanography ICSHMO, New Caledonia, FR. 23-23 April, 2013

C.3. Research projects (principal investigator on 34 research projects)

ESMORGA: Probabilidad de riesgo de fenomenos meteorologicos e hidrologicos extremos en España segun las proyecciones futuras del CMIP-6 en alta resolucion espacial. . IP: Luis Gimeno y Raquel Nieto. Funded by M. Ref TED2021-129152B-C43. 01/12/2022-30/10/2024. (126.500 €). Role in the project: IP . **SETESTRELO:** Evaluacion en alta resolucion del transporte de humedad en el Atlantico Norte en clima actual y en las proyecciones futuras del CMIP-6. IP: Luis Gimeno y Raquel Nieto. Funded by M. Ref PID2021-122314OB-I00. 01/09/2022-31/08/2025. (163.350 €). Role in the project: IP. **LAGRIMA**: LAGRangian analysis of the Impact on the global hydrological cycle of the Major Mechanisms of Atmospheric Moisture Transport). IP: Luis Gimeno and Raquel Nieto. Funded by MINECO. RTI2018-095772-B-I00. 01/01/2019 – 31/12/2021. (84.700 €) Role in the project: IP. **EVOCAR**: The atmosphere moisture transport, the bridge between evaporation and precipitation in the) IP: Luis Gimeno y Raquel Nieto. Funded by MINECO CGL2015-65141-R. 01/01/2016 – 30/09/2019 (146.410,00 €). Role in the project: IP. **SETH.** Drought and moisture transport. IP: Anita Drumond and Luis Gimeno (advisor). Funded by MINECO CGL2014-60849-JIN. 01/10/2015 – 30/09/2018. (194.810,00 €) Role in the project: Participant. **INDROFLOOD:** Improving Drought and Flood Early Warning, Forecasting and Mitigation using real-time hydroclimatic indicators. Coordinator Sergio Vicente-Serrano. IP of the Spanish project Luis Gimeno. Funding entity: European Comission EC under Horizon 2020, Water JPI – WaterWorks 2014. Participating entities: CSIC, Coordinator (Spain). Univ. de Lisboa (FFCUL) Partner (Portugal). Univ. of Cape Town Partner (South AfricA). National Meteorological Adm. Partner (Romania). Univ. of Tartu Partner (Estonia). Research Institute of Field Crops "Selectia" Partner (Moldova). Farisa Partner (Spain). UVIGO Partner (Spain). 01/05/2016 – 31/12/2019 100.000,00 € (Total: 1.086.190,00 €). Role in the project: IP. **THIS**: The role of the moisture transport in the extreme precipitation, flooding and droughts in the European Atlantic coasts. IP: Raquel Nieto. Funded by Xunta de Galicia. Conselleria de Educación. EM2014/043. 14/05/2014 – 14/05/2017 (93.000,00 €) Role in the project: Participant. **ACPCA**: Arctic Climate Processes Linked through the Circulation of the Atmosphere. IP Luis Gimeno. Funded by ERAnet.RUS" programme within FP7. 01/01/2013 - 30/09/2014. PRI-PIMERU-2011-1429. 01/09/2012 – 01/03/2015 (40.000 €) Role in the project: Participant. **TRAMO**: Transport of moisture in the Atmosphere. IP: Raquel Nieto. Funded by MINECO. 01/01/2013 - 31/12/2015. CGL2012-35485. 01/01/2013 - 31/12/2015 (93.000 €) Role in the project: Participant. **STORMEx:** Mid-Latitude North Atlantic Extreme Storms Variability: Diagnosis, Modelling Dynamical Processes and Related Impacts on Iberia. IP Ricardo Trigo. Funded by FCT Portugal. 01/03/2012 – 31/08/2015. (149.000 €) Role in the project: Participant. **MSM.** Dynamical identification of moisture sources in the Mediterranean and analysis of their variability IP: Luis Gimeno. Funded by MICINN CLI-CGL2008-05968-C02-02. 01/01/09 - 31/12/12 (135.000 €) Role in the project: IP. **CIRCE:** Climate Change and Impact Research: the Mediterranean Environment Diagnosis and modelling of the moisture sources in the Mediterranean region. IP: Antonio Navarra. Funded by the European Union FP6 (59 Universities or Research centres). 01/04/2007- 30/06/2011 (13.730.066 €). Role in the project: Participant

C.4. Contracts, technological or transfer merits

- A six years ANECA Transfer merit. (2009-2014)
- Name of contract: ESA CCI Project: EUROPEAN SPACE AGENCY, CLIMATE CHANGE INITIATIVE – WATER VAPOR. Code/Reference: AO/1-9041/17/I-NB. IP Luis Gimeno. Funding entity: ESA (European Space Agency) - University of Reading. Participating entities: UVIGO, University of Reading (UK), DWD (Germany), Telespazio VEGA (UK), Brockmann consult (Germany), Spectral Earth (Germany), STFC Rutherford Appleton Laboratory (UK), ECCC (Canada), (KIT, Germany), University of Leicester (UK), BIRA-IASB(Belgium), University of Versailles (France). Start-End date: 01/05/2020 – 30/09/2021. Incomes: 36.237,00 €. Role in the contract IP
- 2018 Arquimedes Award, Spanish Science Ministry to the best research advisor, Student Luis Gimeno-Sotelo. Tittle of the work *A new pattern of the moisture transport for precipitation related to the drastic decline in Arctic sea ice extent.*
- Name of the contract: RISC Floods and Drought risks in the Miño-Limia basins Code/Reference: 0034_RISC_ML_6_E (IINTERREG-POCTEP 2014-2020). IP M. Gómez-Gesteira. Funding entity: EU FEDER. Participating entities: Confederación Hidrográfica del Miño-Sil, Agência Portuguesa do Ambiente, I.P (APA), UVIGO, Universidade do Porto (FEUP). Start-End date: 01/06/2017 – 31/12/2021. Incomes: 449.821,87 € (Total: 1.751.462,56 €). Role in the project: Participant
- Name of the contract: MarRISK: Adaptation to climate change of the coast of Galicia and north of Portugal. Code/Reference: 0262_MARRISK_1_E (IINTERREG-POCTEP 2014-2020). IP: M. Gómez-Gesteira. Funding entity: EU FEDER. Participating entities: Consellería de Medio Ambiente e Ordenación do Territorio. Xunta de Galicia, Centro Tecnológico del Mar Instituto tecnológico para el control del medio marino de Galicia, Agencia Estatal Consejo Superior de Investigaciones Científicas. Instituto de Investigaciones Marinas, Instituto Português do Mar e da Atmosfera, Universidad de Vigo, Centro Interdisciplinar de Investigação Marinha e Ambiental, Universidade do Minho, Instituto Español de Oceanografia, Universidade de Aveiro, Agência Portuguesa do Ambiente, Instituto de Engenharia de Sistemas e Computadores, Tecnologia e Ciência , Instituto Hidrográfic. Start-End date: 01/06/2017 – 30/06/2021. Incomes: 477.290,62 € (Total: 2.217.787.86 €) Role in the project: Participant

C.5 Professional Service

Member of the editorial board

* 2022- Nature Scientific Data// * 2022- Stochastical and Environmental Research and Assesment// * 2014-2021 Frontiers in Atmospheric Science//* 2014- Atmosphere//* 2008-... Antarctic Science// * 2008-... Advances in Meteorology// * 2007-… Journal of Geophysical Research- Atmospheres// * 2007-2012. Journal of Atmospheric and Solar-Terrestrial Physics// * 2007-… Critical Reviewers in Environmental Science and Technology// * 2007-2016… Research Letters in Physics* 2007-2016… Environmental Science and Policy// * 2007-… The Open Atmospheric Science Journal// * 2007-… Progress in Natural Sciences// * 2006-… Pure and Applied Geophysics// * 2006-2016… The Scientific World Journal-Atmospheric Systems// * 2003-… Climate Research// *2004-2016… Meteorology and Atmospheric Physics// * 2005-2006 Journal of Atmospheric and Ocean Sciences

Editor is special issues of journals

* 2005 SERRA, Statistical Analysis and Modeling of Characteristics and Impacts of Major Mechanisms of Atmospheric Moisture Transport * 2021 Weather and Climate Extremes. Special Issue on “Extreme Precipitation and Drought: Mechanisms associated with Atmospheric Moisture Transport”. * 2021 Frontiers in Earth Science. Special Issue on “Advances in Drought Analytical Tools for Better Understanding of Current and Future Climate Change”. * 2020-ongoing Chief editor Annual Series of Annals of New York Academic of Science “The year in Climate Science Research”. * 2019 Special Editor, Special Issue on “The Hydrological Cycle and the Climate Change”, Annals of New York Academic of Science (NYAS). * 2019 Special Editor Special Issue on “Central America and Caribbean Hydrometeorology and Hydroclimate”. Atmosphere. * 2018 Special Editor on “Caveats in Sustainability of Offshore Energies: Balance between the Environmental Benefits of Using of the Oceans and the Need for Protection of the Environment” Sustainability. * 2017 Special Editor on “From evaporation to precipitation: the atmospheric moisture transport“ Earth Systems Dynamics. * 2017 Special Editor, Special Issue on “Climate Sciences”, Annals of New York Academic of Science (NYAS).
* 2017 Special Editor on “Selected papers of the first International conference on the Hydrological Cycle” Water 2017 Special Editor on “Selected papers of the second International conference in Atmospheric Science” Atmosphere * 2012 Special Editor on "Oceanic sources of continental precipitation". Water Resources Research * 2011 Special Editor on "The Role of the Atlantic warm pool in the climate of the Western Hemisphere". Journal of Geophysical Research-Atmospheres* 2010 Special Editor, Special Issue on "Regional climate change in the Nortwestern Iberian Peninsula". Climate Research * 2008 Associate Editor, Special Issue on “Diagnosis and Modelling of the Tropopause: Structure, Dynamics and Variability”, Journal of Geophysical Research-Atmospheres * 2008 Special Editor, Special Issue on “Trends and Directions in Climate Research”, Annals of New York Academic of Science (NYAS). * 2008 Special Editor, Special Issue on “CAPITOUL PROJECT” Meteorology and Atmospheric Physics * 2007 Guest and Special Editor, Special Issue on “Cut-off Low Systems (COL)”, Meteorology and Atmospheric Physics

Reviewer of proposals for different research Grant Agencies

* Spanish Agencies (ANEP), several years// * The USA National Science Foundation Climate and Large-Scale Dynamics Program, 2005.// * Spanish Science Ministry, several years// * FONDECYT (National Fund of Development Scientific and Technology),//* Chilean Govern, 2006 and 2007// * Chezk Academy of Science, 2007.// *Austrian Agencies, several years

Member of Committees in Scientific conferences

2000 Local Organizing Committee, AGU Chapman Conference on “North Atlantic Oscillation”.// 2004 Organizing Committee, First International School in Advances Climate Studies.// 2007 Chairman and Convenor, Special Session on “Tropopause Dynamics”, 7th EMS Annual Meeting, El Escorial, Madrid, Spain.// 2009 Organizing Commitee, European Science Foundation Workshop on Feedbacks of the Mediterranean dynamics in the global climate system. Sesimbra, Portugal// 2012 Organizing Comitee, 10th ICSHMO, New Caledonia, FR// 2015 Organizing Comitee, 11th ICSHMO, Santiago de Chile, Chile//2016 Organizing Comitee, The first International conference on Atmospheric Sciences // 2016 Organizing Comitee, The 2nd International Congress on Water: Floods and Drought, Ourense, Spain// 2016 Chair, the 8th EGU Leonardo Topical Conference Series on the Hydrological Cycle, Ourense. Spain //2017 Organizing Comitee, The second International conference on Atmospheric Sciences// 2017 Organizing Comitee, 4th International Conference on Ecohydrology, Soil and Climate Change, EcoHCC’17, Figueira da Foz, Portugal //2017 Coo-Chair The First International conference on the Hydrological cycle// 2020 Organizing Comitee, The third International conference on Atmospheric Sciences

Supervision of PhD work

• JOSE CARLOS FERNANDEZ-ALVAREZ, 2024 Future changes in atmospheric moisture and wind field using numerical simulations: Implications for moisture transport and wind energy. International PhD mention • ALBENIS PEREZ-ALARCON, 2023 Modeling of moisture transport associated with tropical cyclones.. International PhD mention. • IAGO ALGARRA 2020 Moisture transport associated with Atmospheric Rivers and Low Level Jets at global scale. International PhD mention. • SANTIAGO SALVADOR 2019 The Influence of International, EU, National and Regional Legislation in the Development of Offshore Wind Farms. The Case of Galicia (Spain). International PhD mention. • DANICA CIRIC 2019 Linking extreme precipitation events and the associated moisture transport. • MILICA STOJANOVIC 2019 The role of atmospheric moisture transport in major drought episodes. • ROGERT SORI 2018 Atmospheric moisture transport: the bridge between ocean evaporation and hydrological extremes in major tropical river basins International PhD mention. UVIGO Best PhD Award 2018. • MARTA VAZQUEZ 2017 Oceanic and terrestrial sources for precipitation in the Arctic: new goals from a Lagrangian perspectives. • ANTONIO P. FERREIRA 2017 On the temperature profile of the lower stratosphere and the sharpness of the tropopause. • RODRIGO CASTILLO 2015 Global sources of moisture: Characterization and study of their variability. • MARIA DEL MAR GOMEZ 2013 Analysis of the moisture sources for the Mediterranean in the period 1980-2000. • ANA M. DURÁN-QUESADA 2012 Sources of moisture for Central America and transport based ona lagrangian approach: variability, contributions to precipitation and transport mechanism. International PhD mention. • ALEXANDER RAMOS 2012 Improving circulation weather type classifications using a 3D framework: relationship with climate variability and projections for future climates. International PhD mention. • JULIA HIDALGO 2008 An observational, numerical and theoretical approach to the daytime Urbanbreeze circulation in inland cities. European PhdD mention. • MARCOS TESOURO 2008 Climatological analysis of the Cold Air Development conceptual Model. • JUAN ANTONIO AÑEL 2007 Climatilogical analysis of the tropopause through radiosonde data. UVIGO Best PhD Award 2008. Calouste Gulbenkian Award 2008 • RAQUEL NIETO 2005 Climatological validation of the Cut-off Low System conceptual model. Young Scientist European Meteorological Society Award. 2011 Young Scientist European Geophysical Union Award (Atmospheric Sciences Division). • LAURA DE LA TORRE 2003 Diagnosis of the Northern Hemisphere Annular Mode through NCAR-NCEP reanalysis. UVIGO Best PhD Award 2003.

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CURRICULUM VITAE ABREVIADO (CVA)

***IMPORTANT** – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.*

Part A. PERSONAL INFORMATION

First name	Pablo		
Family name	Zurita Gotor		
Gender (*)		Birth date (dd/mm/yyyy)	[redacted]
Social Security, Passport, ID number	[redacted]		
e-mail	pzurita@ucm.es	URL Web	http://alum.mit.edu/www/pzurita
Open Researcher and Contributor ID (ORCID) (*)		0000-0002-6873-7645	

(*) Mandatory

A.1. Current position

Position	Full profesor		
Initial date	17/2/2022		
Institution	Universidad Complutense		
Department/Center	Earth Physics and Astrophysics	Faculty of Physics	
Country	Spain	Teleph. number	91 3944397
Key words	General circulation, Atmospheric Dynamics, Geophysical Fluid Dynamics, Instability, Wave-mean flow interaction		

A.2. Previous positions (research activity interuptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
2011-2022	Associate Professor (Universidad Complutense)
2006-2011	Ramón y Cajal research fellow (Universidad Complutense)
2004-2006	UCAR Visiting Scientist (GFDL, Princeton, NJ, USA)
2003-2004	Postdoctoral Fellow (SUNY Stony Brook, NY, USA)
1996-2003	Graduate research fellow (MIT, Cambridge, MA, USA)

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD Atmospheric Science	Mssachusetts Institute of Technology, USA	2003
Mechanical Engineer (M Eng)	Universidad de Sevilla, Spain	1995

(Include all the necessary rows)

Part B. CV SUMMARY *(max. 5000 characters, including spaces)*

Pablo Zurita-Gotor (PZG) is a professor in the department of Earth Physics and Astrophysics at the school of Physics of Complutense University of Madrid. He received a doctoral degree in Atmospheric Science from the Massachusetts Institute of Technology (2003) under the supervision of Dr. Richard Lindzen. This was followed by a postdoctoral position at the State University of New York at Stony Brook (2003-2004) and a postdoctoral fellowship (UCAR Visiting Scientist Program) at the Geophysical Fluid Dynamics Laboratory in Princeton, NJ (2004-2006). PZG returned to Spain in 2006 as a Ramón y Cajal fellow, earned an Associate Professor position in 2011, and was promoted to Full Professor in 2022. He has been granted 4 six-year positive research evaluations (sexenios) during this time. In parallel with his teaching and research duties in Spain, PZG has maintained a fruitful collaboration with Princeton University, still ongoing, with 16 summer visits totaling over 36 months since 2007.

The main research interest of PZG is the dynamics of the Atmospheric General Circulation. His early career focused on the extratropical circulation. As an expert in baroclinic instability, wave-mean flow interaction and baroclinic equilibration, he has authored the chapter on '*Wave-mean flow interaction: baroclinic adjustment*' for the Encyclopedia of the Atmospheric

Sciences. In addition to this topic, the research of PZG has addressed multiple other aspects of the extratropical circulation, including: geostrophic turbulence; moist baroclinic instability; determination of the extratropical tropopause; storm track dynamics; annular mode variability and jet shifts; extratropical driving of the Hadley cell; stratosphere-troposphere coupling; etc. This research is characterized by its strong theoretical focus and combines mathematical analysis with the use of intermediate complexity models. This is another topic of interest for PZG, who participated in the development of the first idealized moist GCM, widely used today, and is coauthor of a high-impact review on hierarchical climate modeling in Reviews of Geophysics.

Over the last 10 years, the focus of PZG's research has shifted from the extratropical to the tropical circulation, an area in which he has produced highly innovative and internationally recognized work (3 recent invited presentations on the topic to international workshops). On this area, he has uncovered the key divergent contribution to tropical eddy momentum transport, proposed a new paradigm for understanding this transport and investigated its implications for the determination of tropical divergence. Additionally, he has discovered a new form of ITCZ instability caused by radiation-circulation coupling, and he has studied the impact of resolution for gross moist stability and the tropical eddy spectrum with non-parameterized convection. The most recent research of PZG focuses on Kelvin-Rossby instability. This is a poorly understood form of unbalanced shear instability coupling tropics and extratropics, relevant for the superrotation of some planetary atmospheres (including past hot terrestrial climates). This research has culminated in the formulation of a quasi-analytical benchmark model of Kelvin-Rossby instability that has yielded new insight into its dynamics. The simple model elucidates for the first time the physical mechanism for the mutual amplification of the two waves, associated with the interaction between the rotational and divergent components of the flow.

All this diverse work has been published in a large number of articles in first-quartile journals, most of them as first (or single) author. The majority of these publications have appeared in the leading journal in atmospheric dynamics, the Journal of the Atmospheric Sciences (JAS), for which PZG also serves as an associate editor. PZG is a dedicated reviewer with hundreds of reviews for the leading journals in the field. The American Meteorological Society has recognized PZG's broad expertise and the quality of his reviews with JAS editor's award "*for providing insightful reviews on manuscripts, including particularly challenging ones*". Additionally, PZG routinely reviews research proposals for national and international funding agencies, such as the National Science Foundation and the Israeli Science Foundation.

The work of PZG has been funded by several research projects, national and international. He was Principal Investigator of 5 different projects funded by the Spanish Research Agency (AEI), which has allowed PZG to supervise 4 doctoral students. PZG has strong international connections. Besides the long-term collaboration with Princeton University, he received a CNRS Visiting Scientist fellowship to visit the Laboratoire de Météorologie Dynamique in Paris and he has imparted seminars in several prestigious universities, including Princeton, Oxford, MIT, Columbia, New York University, Exeter, and UPMC Paris, among others.

Part C. RELEVANT MERITS *(sorted by typology)*

C.1. Publications *(see instructions)*

1. **Zurita-Gotor, P.**, and I. M. Held, 2025: Strong Superrotation at High CO2 in an Idealized Terrestrial Aquaplanet. *J. Climate*, **38**, 4789-4805.

2- Macdonald, C. G., **Zurita-Gotor, P.,** Held, I. M., & Ming, Y., 2025. Convectively Coupled Global Rossby Modes in an Idealized Moist GCM. *J. Atmos. Sci.*, **82**, 319-341.

3. Martínez-Andradas, V., de la Cámara, A., **Zurita-Gotor, P.**, & Butler, A. H., 2025. La Niña Obscures the North Atlantic Response to Sudden Stratospheric Warmings in C3S Seasonal Forecasts. *Geophys. Resea. Lettrs*, *52*. https://doi.org/10.1029/2025GL118128

4. Chang, C-Y., Lin, P., Held, I., Merlis, T., and **P. Zurita-Gotor**, 2025: Resolution Dependence of Tropical Poleward Energy Transport in Aquaplanet GCMs. *JAMES*, 17, e2025MS005103

5. Held, I. M., & **Zurita-Gotor, P.**, 2025. Misuse of Kuo–Eliassen Equation in Studies of the Climatological Mean Meridional Circulation *J. Atmos. Sci.*, **82**, 1763-1766.

6. Martínez-Andradas, V., de la Cámara, A., **Zurita-Gotor, P.,** Lott, F., & Serva, F., 2025. Quantifying the spread in sudden stratospheric warming wave forcing in CMIP6. *Weather and Climate Dynamics*, *6*(1), 329-343.

7. **Zurita-Gotor, P**., 2025. Wave-mean Flow Interaction: Baroclinic Adjustment. En *Encyclopedia of Atmospheric Sciences* (pp. V4:221-V4:230). Elsevier.

8. **Zurita-Gotor, P.**, and I. M. Held, 2024: Factors Controlling Superrotation in a Terrestrial Aquaplanet. *J. Atmos. Sci.*, **81**, 1901-1920.

9. **Zurita-Gotor, P.,** Held, I. M., Merlis, T. M., Chang, C.-Y., Hill, S. A., & MacDonald, C. G., 2023. Non-Uniqueness in ITCZ Latitude Due To Radiation-Circulation Coupling in an Idealized GCM. *JAMES 15*(10). https://doi.org/10.1029/2023MS003736

10. Martínez-Andradas, V., de la Cámara, A., & **Zurita-Gotor, P**., 2023. Stratosphere-Troposphere Coupling during Sudden Stratospheric Warmings with Different North Atlantic Jet Response. *J. Climate*, *36*, 6111-6124. https://doi.org/10.1175/JCLI-D-22-0736.1

C.2. Congress, indicating the modality of their participation (invited conference, oral presentation, poster)

1. **Zurita-Gotor, P.** A Simple Eady Analog for Kelvin-Rossby Instability. 25th Conference on Atmospheric and Oceanic Fluid Dynamics. Houston, TX, USA, 25-29/1/26 **Oral**

2. **Zurita-Gotor, P.** Strong Superrotation at High CO2 in an Idealized Terrestrial Aquaplanet. 1st Symposium on Tropical Meteorology and Climate. Houston, TX, USA, 25-29/1/26 **Oral**

3. **Zurita-Gotor, P.** and I.M. Held. Extratropical Eddies Prevent Superrotation in a Terrestrial Aquaplanet. 24th Conference on Atmospheric and Oceanic Fluid Dynamics. Burlington, VT, USA, 24-28/6/24 **Oral**

4. **Zurita-Gotor, P**, I.M. Held, and A. Anaya-Benliure. *Kelvin-Rossby Instability and Equatorial Superrotation in a Terrestrial Dry Dynamical Core*. 23rd Conference on Atmospheric and Oceanic Fluid Dynamics. Breckenridge, USA, 13-17/6/22. **Oral**

5. **Zurita-Gotor, P**. *Abrupt transition to superrotation in an idealized GCM with terrestrial parameters*. Laboratoire de Météorologie Dynamique, Paris, France, 20/5/22. **Invited seminar**

6. **Zurita-Gotor, P**. *Some differences between extratropical and equatorial eddy-driven jets*. Physics at the equator: from the lab to the to the stars. Lyon,France 16-18/10/19 **Invited oral**

7. **Zurita-Gotor, P**. *Dynamics of Tropical Eddy Momentum Transport and Equatorial Eddy-Driven jets*. 22nd Conference on Atmospheric and Oceanic Fluid Dynamics. Portland, ME, USA, 24-28/6/19. **Oral**

8. **Zurita-Gotor, P**. *Tropical eddy momentum transport*. European Geosciences Union General Assembly 2019. Vienna, Austria, 8-12/4/19. **Oral**

9. **Zurita-Gotor, P**. *Importance of cross-isentropic momentum transport for equatorial westerly acceleration*. Rotating Fluids Meeting. Exeter, UK, 3-4/4/19. **Invited oral**

10. **Zurita-Gotor, P.** *Large-scale Tropical Eddy Momentum Transport*. Understanding and Modeling the Earth's Climate. Princeton, NJ, Estados Unidos, 29-31/10/18. **Invited oral**

C.3. Research projects, indicating your personal contribution.

I have been PI of the following projects

1. Investigación del impacto de la interacción de Kelvin-Rossby en la circulación general atmósferica. I3KR (PID2022--136316NB-100). Financiación: €129.000, Ministerio de Ciencia e Innovación. IPs: Pablo Zurita Gotor y Álvaro de la Cámara Illescas (UCM)

2. Forzamiento dinámico y mecanismos de generación de los calentamientos súbitos estratosféricos. DYNWARM (PID2019-109107GB-I00). Financiación: €105.000, Ministerio de Ciencia e Innovación. IPs: Pablo Zurita Gotor y Álvaro de la Cámara Illescas (UCM)

3. Dinámica del transporte turbulento de momento en los trópicos y forzamiento de la variabilidad del chorro subtropical (PR87/19-22537). Financiación: €14.000, Universidad Complutense. IP: Pablo Zurita Gotor (UCM)

4. Representación de ondas de Kelvin en modelos de balance. KELBAM (CGL2015-72259-EXP) Financiación: €48,400, Ministerio de Economía y Competitividad, 2017-2020.IP: Pablo Zurita Gotor (UCM)

5. Modelos conceptuales para la altura de la tropopausa extratropical. COMETH (CGL2012-30641). Financiación: €86.000, Ministerio de Economía y Competitividad, 2013-2017.IP: Pablo Zurita Gotor (UCM)

6. Dinámica del equilibrio y variabilidad interna anual del jet extratropical. DEVIAJE (CGL2009-06944). Financiación: €145.200, Ministerio de Economía y Competitividad, 2010-2013. IP: Pablo Zurita Gotor (UCM)

Selected recent projects to which I have contributed :

7. Addressing Problems in Tropical Atmospheric Dynamics Using Idealized Global Climate Models (AGS-2246700). Financiación: $399.999, National Science Foundation (EEUU), 2023-2025. IPs: Isaac M. Held, Yi Ming, Timothy M. Merlis (Princeton University)

8. Global atmospheric modeling hierarchy development (AGS-1733818). Financiación: $368.220, National Science Foundation (EEUU), 2017-2021. IPs: Isaac M. Held, Stephan Fueglistaler (Princeton University)

9. Dynamics of the Midlatitude Circulation and Implications for a Changing Climate (1144302). Financiación: $606.252, National Science Foundation (EEUU), 2012-2015. IP: Geoffrey K. Vallis (Princeton University)

10.Tropical-extratropical interaction in a hierarchy of atmospheric models (0612551). Financiación: $449.111, National Science Foundation (EEUU), 2006-2010. IP: Geoffrey K. Vallis (Princeton University)

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CURRICULUM VITAE (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

CV date	23/09/2025

First name	F. Javier		
Family name	Acero		
Gender (*)		Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail	fjacero@unex.es	URL Web	
Open Researcher and Contributor ID (ORCID) (*)		0000-0003-2073-8232	

(*) Mandatory

A.1. Current position

Position	Tenured Professor		
Initial date	27/10/2020		
Institution	University of Extremadura		
Department/Center	Physics		
Country	Spain	Teleph. number	+3492448911
Key words	Climate variability, extreme value theory, extreme temperatures		

A.2. Previous positions (research activity interuptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
2003-2020	Associate Professor/ University of Extremadura/ Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Graduate in Physics	Extremadura / Spain	2000
PhD in Science	Extremadura / Spain	2005

Part B. CV SUMMARY *(max. 5000 characters, including spaces)*

Since 2011, 18 papers in JCR (9 in Q1, 9 in Q2). H-index=12. 379 citations total.
Three periods of 6 years on research work (sexenios) recognized by the National Committee for the Assessment of the Research activity (CNEAI).

Main areas of research
Study of liquid bridges in microgravity conditions.
Climate variability past and present.
Study of extremes with spatio-temporal models in different meteorological and astrophysical variables using Extreme Value Theory (EVT).
Extreme temperature events using a Regional Climate Model WRF.

Professional experience
Bs. in Physics, UEx, Spain, 2000.

Ph.D. in Physics, UEx, 2005.
Teaching Assistant, Physics of the Earth, Badajoz, UEx, 2003-2006.
Visiting Scientist, Lisbon Geophysical Centre, Portugal, 4-months (jun-oct) in 2006.
Assistant Professor, Physics of the Earth, Badajoz, UEx, 2006-10/2020.
Visiting Scientist, EDF/R&D (Electricité de France), Chatou (France), 1 month in 2013, 1.25 months in 2014 and 1.25 months 2015.
Tenured Professor, Physics of the Earth, Badajoz, UEx, 10/2020-present.

Books
M. L. Cancillo, J. A. García, A. Serrano, V. L. Mateos, M. C. Gallego, F. J. Alonso, F. J. Acero, M. Antón (2006) Guiones de prácticas de Técnicas experimentales en Meteorología (Cáceres: Servicio de Publicaciones de la UEx, 123 pp., Colección Manuales uex-46). [I.S.B.N. 84-7723-688-7]

Contributions in journals:
25 articles published in refereed journals included in the Journal Citation Reports.
h-index = 12, total cites: 379 (SCOPUS)

Other Data:
PI of 2 funded research projects.
Referee for 6 journals.
Academic Secretary of the Department of Physics of the UEx from May 2011 to May 2019.
Director of the Department of Physics of the UEx from May 2019 to present.

There are two main lines of research in the career of Francisco Javier Acero. One was focused on the study of liquid bridges in microgravity conditions concluding with the PhD. The other, since 2006, is focused on the climatic variability of meteorological and astrophysical variables. These studies have been carried out using spatio-temporal models combining Extreme Value Theory and different approaches to address the problem of spatial extremes (max-stable random fields, copulas, and Bayesian hierarchical models). F. J. Acero is author in two recent works (García et al. 2023, García et al. 2024) about the study of temperature using a regional climate model (RCM) over the Iberian Peninsula in which the temperature in the present climate was simulated by means of a RCM. Specifically, the WRF v4.0 model using ERA Interim reanalysis boundary conditions for the period 1985-2015 was used.

Part C. RELEVANT MERITS *(sorted by typology)*

C.1. Publications *(see instructions)*

F.J. Acero, M. Antón, A.J.P. Aparicio, N. Bravo-Paredes, V.M.S. Carrasco, M.C. Gallego, J.A. García, M. Núñez, I. Tovar, J. Vaquero-Martínez, J.M. Vaquero (2025). The anomalously thundery month of June 1925 in southwest Spain: description and synoptic analysis, Nat. Hazards Earth Syst. Sci., 25, 305–320, https://doi.org/10.5194/nhess-25-305-2025, 2025.

F.J. Acero, V.M.S. Carrasco, M.C. Gallego, I.G. Usoskin, J.M. Vaquero (2025). 14C-Based Sunspot Numbers for the Last Millennium Encompass the Full Range of Variability: Extreme Value Theory. Sol Phys 300, 50. https://doi.org/10.1007/s11207-025-02464-6

J. A. García, F.J. Acero, M. Martínez-Pizarro, M. Lara (2024). A Bayesian hierarchical spatio-temporal model for summer extreme temperatures in Spain. Stochastic Enviromental Research and Risk Assesment. 38: 3393-3410. https:// oi.org/10.1007/s00477-024-02754-8

J.A.García, F.J.Acero, J. Portero (2023). A Bayesian hierarchical spatio-temporal model for extreme temperatures in Extremadura (Spain) simulated by a Regional Climate Model. Climate Dynamics, 61, 1489–1503. https://doi.org/10.1007/s00382-022-06638-x.

J.A.García, M. Martínez-Pizarro, F.J.Acero, M. I. Parra-Arévalo (2021). A Bayesian Hierarchical Spatial Copula Model: An Application to Extreme Temperatures in Extremadura (Spain). Atmosphere 12:897, pp. 1-15.

J. Portero, F.J.Acero, J.A.García (2020). Analysis of extreme temperature events over the Iberian Peninsula during the 21st century using dynamic climate projections chosen using max-stable processes. Atmosphere 11:506, pp. 1-26.

F. J. Acero, S. Parey, J. A. García, D. Dacunha-Castelle (2018). Return Level Estimation of Extreme Rainfall over the Iberian Peninsula: Comparison of Methods. Water 10 (179), 1-16. DOI: 10.3390/w10020179.

F. J. Acero, J. M. Vaquero, M. C. Gallego, J. A. García (2018). A limit for the values of the Dst geomagnetic index. Geophysical Research Lettters. 45, pp. 1-6. DOI: 10.1029/2018GL079676.

F. J. Acero; M. I. Fernández-Fernández; V. M. S. Carrasco; S. Parey; T. T. H. Hoang; D. Dacunha-Castelle; J. A. García (2018). Changes in heat wave characteristics over Extremadura (SW Spain). Theoretical and Applied Climatology 133, 605-61. doi:10.1007/s00704-017-2210-x

F. J. Acero, M. C. Gallego, J. A. García, I. G. Usoskin, J. M. Vaquero (2018). Extreme value theory applied to the millenial sunspot number series. The Astrophysical Journal, 853:80 (6pp), pp. 1-6. Doi:10.3847/1538-4357/aaa406.

F. J. Acero, S. Parey, T.T.H. Hoang, D. Dacunha-Castelle, J. A. García, M.C. Gallego, (2017). Non-stationary future return levels for extreme rainfall over Extremadura (southwestern Iberian Peninsula). Hydrological Sciences Journal, 62:9, 1394-1411, DOI: 10.1080/02626667.2017.1328559

F. J. Acero, V.M.S. Carrasco, M.C. Gallego, J. A. García, J.M. Vaquero. (2017). Extreme Value Theory and the new sunspot number series. The Astrophysical Journal, 839:98 doi: 10.3847/1538-4357/aa69bc.

F. J. Acero, J. A. García, M.C. Gallego, S. Parey, D. Dacunha-Castelle. (2014). Trends in summer extreme temperatures over the Iberian Peninsula using non-urban station data. Journal of Geophysical Research, 118, 39-53 doi:10.1002/2013JD020590.

C.2. Congress

F. J. Acero, J. Portero, J.A. García. Trends of extreme temperature events over the Iberian Peninsula during 21st century.EGU General Assembly 2020. Date from: 04/05/2020 to 08/05/2020. European Geoscience Union (EGU) - Copernicus Meeting.

M. I. Parra, E. T. López-Sanjuán, M. Martínez-Pizarro, J. Martín, F. J. Acero. An improved prior choice for Gumbel distribution parameters to model extreme values. 12th International Conference of the ERCIM WG on Computational and Methodological Statistics. Londres, Reino Unido. Date from: 14/12/2019 to 16/12/2019. CFE-CMStatistics

J. Portero, F. J. Acero, J. A. García. Trend analysis of extreme temperature events over the Iberian Peninsula. EMS Annual Meeting 2019. Copenhague, Dinamarca. Date from: 09/09/2019 to 13/09/2019. European Meteorological Society (EMS) - Copernicus Meeting.

C.3. Research projects

Project title: TRODIM: DIAGNOSIS AND MODELING OF THE EXTRATROPICAL TROPOPAUSE (SUBPR: MATRIMOD: USE OF TROPOPAUSE MAPS TO CHARACTERIZE CONCEPTUAL MODELS AT SYNOPTIC SCALE)

Financing entity: National R&D Plan. Call 2007 (File: CGL2007-65891-C05-05)).
Participating entities: Physics Department - University of Extremadura
Duration, from: 12/01/2007 to: 11/30/2010
Grant amount: € 125,840.00
Responsible Researcher: Dr. José Agustín García García
Number of participating researchers: 4

Title of the project: CLIMATE CHARACTERIZATION IN THE IBERIAN PENINSULA DURING THE PERIOD 1750-1850
Financing entity: Strategic action of the Ministry of the Environment, Rural and Marine (File: 200800050083542)
Duration, from: 12/01/08 to: 12/31/2011.
Grant amount: € 75620
Responsible Researcher: Dr. José Manuel Vaquero Martínez
Number of participating researchers: 6

Project title: STUDY OF THE VARIABILITY OF EXTREME PRECIPITATION EVENTS OVER EXTREMADURA
Funding entity: Junta de Extremadura - FEDER (File: IB10077)
Participating entities: Department of Physics (University of Extremadura)
Duration, from: 12/30/2010 to: 12/29/2013.
Grant amount: € 25,796
Responsible Researcher: Mª Cruz Gallego Herrezuelo
Number of participating researchers: 4

Project title: STUDY OF THE VARIABILITY OF PRECIPITATION TRENDS OVER THE IBERIAN PENINSULA
Funding entity: National R & D Plan (CGL2011-25609)
Participating entities: University of Extremadura
Duration, from: 01/01/2012 to: 12/31/2012.
Grant amount: € 14,520
Responsible Researcher: Mª Cruz Gallego Herrezuelo
Number of participating researchers: 5

Project title: STUDY OF HEAT WAVES IN EXTREMADURA: PRESENT AND FUTURE CLIMATE
Funding entity: Junta de Extremadura - FEDER (File: IB13049)
Participating entities: Department of Physics (University of Extremadura)
Duration, from: 07/30/2014 to: 07/29/2016.
Grant amount: € 59,950
Responsible Researcher: Francisco Javier Acero Díaz
Number of participating researchers: 4

Project title: DEVELOPMENT AND APPLICATION OF A MODEL FOR THE PREDICTION OF EXTREME TEMPERATURES IN EXTREMADURA
Funding entity: Junta de Extremadura - FEDER (File: IB16063)
Participating entities: Department of Physics (University of Extremadura)
Duration, from: 06/03/2017 to: 11/08/2020.
Subsidy amount: € 108 174
Responsible Researcher: Francisco Javier Acero Díaz
Number of participating researchers: 6

Project title: EVALUATION OF THE HISTORICAL CLIMATE OF THE SOUTHWEST OF IBERIA AND ITS FORCES.
Funding entity: State Research Agency (reference: CGL2017-87917-P)
Participating entities: Department of Physics (University of Extremadura)
Duration, from: 01/01/2018 to: 12/31/2020.
Grant amount: € 108,900

Responsible Researcher: José Manuel Vaquero Martínez
Number of participating researchers: 6

Project title: Eventos de interés para las ciencias de la tierra y del espacio en Extremadura a partir de sus documentos y prensa histórica..
Funding entity: Junta de Extremadura (reference: IB20080)
Participating entities: Department of Physics (University of Extremadura)
Duration, from: 17/06/2021 to: 16/06/2024.
Grant amount: € 149.999,30
Responsible Researcher: José Manuel Vaquero Martínez y María Cruz Gallego Herrezuelo.
Number of participating researchers: 6

Project title: “Predicción a corto plazo de la radiación solar enriquecida con información de aerosoles”.
Funding entity: Ministerio de Ciencia e Innovación y Agencia Estatal de Investigación y por la Unión Europea NextGenerationEU/Plan de Recuperación, Transformación y Resiliencia (reference: TED2021-130532A-I00/AEI/10.13039/501100011033)
Participating entities: Department of Physics (University of Extremadura)
Duration, from: 01/12/2022 to: 30/11/2024.
Grant amount: 126500 €
Responsible Researcher: María Ángeles Obregón Muñoz.
Number of participating researchers: 4

C.4. Contracts, technological or transfer merits

Project title: Study on the economic impact of extreme climatic events: the case of sheep, within the “Extremadura Open Abroad” Strategy.
Funding entity: Fundación Bancaria Caja de Extremadura and EA Group. (Ref: 086/18)
Participating entities: University of Extremadura
Duration, from: 03/22/2018 to: 01/22/2019.
Grant amount: € 8,264.46
Responsible Researcher: Agustín García García
Number of participating researchers: 7

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CURRICULUM VITAE (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

CV date	23 Sep 2025

First name	**María Cruz**		
Family name	**Gallego**	Herrezuelo	
Gender (*)		Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail	**maricruz@unex.es**	URL Web:	
Open Researcher and Contributor ID (ORCID) (*)		**0000-0002-8591-0382**	

(*) Mandatory

A.1. Current position

Position	**Catedrática de Universidad (Full Professor)**			
Initial date	**10 September 2021**			
Institution	**Universidad de Extremadura**			
Department/Center	**Física**	**Facultad de Ciencias**		
Country	**Spain**		Teleph. Number	
Key words	**Climatology, Historical Climatology, Space Climate**			
Recognized research six-year periods (“sexenios”)	**Four six-year research periods: 1999-2004, 2005-2010, 2011-2016 and 2017-2022**			

A.2. Previous positions (research activity interuptions, art. 14.2.b)

Period	Position/Institution/Country/Interruption cause
08/10/2001-31/08/2007	Profesora Asociada/ Universidad de Extremadura/ España
01/09/2007-14/04/2011	Profesora Contratada Doctora/ Universidad de Extremadura/ España
15/04/2011-09/09/2021	Profesora Titular de Universidad/ Universidad de Extremadura/ España

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Licenciada en Ciencias Físicas	Universidad de Extremadura/Spain	1997
Licenciada con Grado	Universidad de Extremadura/Spain	1999
Master of Science (Meteorología)	Universidad de Extremadura/Spain	2001
Doctora en Ciencias Físicas	Universidad de Extremadura/Spain	2004

Part B. CV SUMMARY *(max. 5000 characters, including spaces)*

María Cruz Gallego Herrezuelo is currently a Full Professor at the Department of Physics at the University of Extremadura (UEx). Her main research areas focus on climatology, the study of extreme weather events, and the reconstruction of solar activity and Earth's climate over the past centuries using historical sources.

After earning her degree in Physical Sciences in 1997 from the University of Extremadura, she joined the research group 'Atmosphere, Climate, and Radiation in Extremadura (AIRE)' at the University of Extremadura, led by Prof. José Agustín García. She furthered her studies on climate mathematical modeling at the German research center GKSS. She also maintains close collaboration with the Geophysics Center of the University of Lisbon. In 2004, she obtained her Ph.D. in Physical Sciences with a study on daily precipitation in the Iberian Peninsula. She has been affiliated with the University of Extremadura since 1998. She holds 4 six-year research periods and 5 five-year teaching periods, all possible in both cases. She was the Academic Secretary of the Faculty of Sciences from April 7, 2011, to May 11, 2015. She is currently the Director of the University Research Institute for Water, Climate Change, and Sustainability. She belongs to the research group 'Space & Earth Sciences (SpES)', led by Prof. José M. Vaquero.

A great enthusiast of science, she has carried out numerous activities related to scientific dissemination. She has published 3 books, over 145 research articles in SCI-indexed journals in her specialty, and 23 book chapters and articles in other journals. Of the articles published in SCI-indexed journals, 42% appear in first-quartile (Q1) publications, 36% in second-quartile (Q2), 12% in third-quartile (Q3), and 12% in fourth-quartile (Q4). Notably, her study on the role of women as weather observers was published in the 'Bulletin of the American Meteorological Society'. Additionally, her studies on precipitation index trends in the Iberian Peninsula have been pioneering in this field, and her results have been verified by the Intergovernmental Panel on Climate Change. In solar activity reconstruction, she has contributed numerous studies that allow us to better understand the Sun and its activity since its observation was recorded. She is one of the authors of the sunspot group number database from 1610 to the present, which is being used by the scientific community as a basis for establishing solar activity over the last four centuries through the 'Sunspot Number', an index used in many branches of science and engineering. In climate reconstruction, her research to rescue past meteorological and climatological data has resulted in a large number of instrumental series available worldwide for researchers, as well as numerous articles. It is worth noting the cooperative nature of many of these works, in which she has collaborated with researchers from around the world to carry them out. According to Google Scholar, as of February 26, 2025, her publications have over 3200 citations, and her h-index is 29. She has supervised 5 doctoral theses, defended in June 2015, January 2016, November 2016, October 25, 2019, and December 14, 2023, and 40 academic works, with her students obtaining the highest grades. Always involved in monitoring her students, she tutors in the degrees she teaches. She has also been dedicated to disseminating both these degrees and her research topics, participating in a large number of scheduled activities (Educational Fairs, Researchers' Night, Pint of Science, International Day of Women and Girls in Science, Science Week, Breakfast with Science, Circular Science, San Alberto Magno Conference Series, ...) or promoted by her group (Fis&Kids workshops, ...), with the aim of disseminating science and bringing it closer to society, also highlighting her role as a female scientist to help other girls choose these disciplines. In 1999, she was awarded the Extraordinary Degree Prize, and in 2009, she won the VI 'Juan José Morales' Research Prize for young researchers. Additionally, her research group received the ADENEX award in 2008. She belongs to several scientific societies. She has been Secretary of the Local Section in Extremadura of the Royal Spanish Society of Physics and is currently its Vice President. She has been a member of the Extremadura Climate Change Observatory of the Junta de Extremadura since February 2021. She has been the coordinator of the 'Teaching and Dissemination in Physics Innovation Group (TeachPhys)' since July 2022. She has participated in numerous conferences in her specialty, with a hundred communications, and in workshops as an invited speaker. Additionally, she is a reviewer for SCI-included journals and ANEP projects in the Earth Sciences area. She has participated in 31 research projects, being the principal investigator in five of them, and in 22 teaching innovation projects.

In her more than 20 years of dedicated university teaching, she has taught various and diverse subjects in different degrees of the Faculty of Sciences, being the coordinator in many of them, has participated in numerous teaching initiatives and research, prepared practices for both laboratories and computer classrooms, and developed numerous teaching materials.

Part C. RELEVANT MERITS *(sorted by typology)*

C.1. Publications *(selection)*

- MC Gallego et al. (2011) “Trends in frequency indices of daily precipitation over the Iberian Peninsula during the last century” Journal of Geophysical Research: Atmospheres 116 (D2) 80.
- F. J. Acero, J. A. García, and M. C. Gallego (2011) "Peaks-Over-Threshold Study of Trends in Extreme Rainfall Over the Iberian Peninsula" Journal of Climate 24. doi: 10.1175/2010JCLI3627.1.
- JM Vaquero, MC Gallego, IG Usoskin, GA Kovaltsov (2011) “Revisited sunspot data: A new scenario for the onset of the Maunder minimum” The Astrophysical Journal Letters 731 (2), L24.
- F Domínguez-Castro, JM Vaquero, MC Gallego et al. (2017) “Early meteorological records from Latin-America and the Caribbean during the 18th and 19th centuries” Scientific data 4, 170169.
- N. Bravo-Paredes, M.C. Gallego, J.M. Vaquero, R.M. Trigo (2021) “The catastrophic floods in the Guadiana River basin since 1500 CE” Science of the Total Environment 797, 149141.
- J.M. Vaquero, N. Bravo-Paredes, …, M.C. Gallego (2021) “Recovery of early meteorological records from Extremadura region (SW Iberia): the "CliPastExtrem" (v1.0) database” Geoscience Data Journal. https://doi.org/10.1002/gdj3.131
- M.A. Obregón, M.T. Rodas, A.M.M. Farrona, F. Domínguez-Castro, M.C. Gallego, R. García-Herrera, J.M. Vaquero (2022) “On the value of early marine weather observations: the Malaspina expedition (1789-1794)” Bulletin of the American Meteorological Society 103, E1684–E1695. https://doi.org/10.1175/BAMS-D-21-0051.1
- N. Bravo-Paredes, M.C. Gallego, R.M. Trigo, and J.M. Vaquero (2023) “Earliest meteorological readings in San Fernando (Cádiz, Spain)” Climate of the Past 19, 1397–1408. https://doi.org/10.5194/cp-19-1397-2023
- F. Domínguez-Castro, M.C. Gallego, J.M. Vaquero, R. García Herrera, V. Corral, R.M. Marina Sáez, R.M. Trigo, R. Libonati, I. Noguera, A. El Kenawy, D. Peña Angulo, S.M. Vicente Serrano (2023) “The first systematic meteorological observations of the Americas (Recife, 1640-1642)” Bulletin of the American Meteorological Society 104(8), E1493–E1506. https://doi.org/10.1175/BAMS-D-21-0269.1
- Acero, F. J., Antón, M., Aparicio, A. J. P., Bravo-Paredes, N., Carrasco, V. M. S., Gallego, M. C., García, J. A., Núñez, M., Tovar, I., Vaquero-Martínez, J., and Vaquero, J. M. (2025) “The anomalously thundery month of June 1925 in southwest Spain: description and synoptic analysis” Nat. Hazards Earth Syst. Sci., 25, 305–320, https://doi.org/10.5194/nhess-25-305-2025.

C.2. Congress

- J.M. Vaquero, F. Domínguez-Castro, M.C. Gallego, R. García-Herrera, R.M. Trigo. “Recovery of early instrumental meteorological data in the Iberian and former colonies context: a review”. Early Instrumental Meteorological Series. University of Bern, Suiza. 6/2018
- M.C. Gallego and J.M. Vaquero “Great historical events of space weather from Spanish documents: a review”. XXXth General Assembly of the International Astronomical Union. Vienna, Austria. 8/2018
- N. Bravo-Paredes, M.C. Gallego, J.M. Vaquero. “ Are the Rogation Ceremonies in Extremadura Region a Good Proxy for the NAO Index?”. 11º Simpósio de Meteorologia e Geofísica da APMG e XX Encontro Luso-Espanhol de Meteorologia. Cascais, Portugal. 3/2019
- N. Bravo Paredes, M. Antón, M.C. Gallego, M. Núñez, J.M. Vaquero. “ Analysis of actinometric measurements for the period 1913-1923 in Cáceres (Spain)”. XXXVII Reunión Bienal de la Real Sociedad Española de Física. Zaragoza, España. 7/2019
- M.C. Gallego, J.M. Vaquero, F. Domínguez-Castro, R. García-Herrera. ”Early instrumental observations in Equatorial Guinea by the Urquiola sisters”. XXXVII Reunión Bienal de la Real Sociedad Española de Física. Zaragoza, España. 7/2019

C.3. Research projects

- Eventos de interés para las ciencias de la Tierra y del Espacio en Extremadura a partir de sus documentos y prensa histórica IB20080, Junta de Extremadura - FEDER (IB20080). Jun 2021- Jun 2024. IPs: José Manuel Vaquero Martínez y María Cruz Gallego Herrezuelo
- Evaluación del clima histórico del suroeste de Iberia y sus forzadores, CGL2017-87917-P, Plan Nacional de I+D+i 2018-2020, IPs: José Manuel Vaquero Martínez y María Cruz Gallego Herrezuelo
- Caracterización del clima del pasado reciente usando archivos y bibliotecas de Extremadura, IB16127, Junta de Extremadura – FEDER 03/06/2017 - 02/06/2020, IP: José Manuel Vaquero Martínez
- Grandes Eventos de Máximos y Mínimos de Actividad Solar, AYA2014-57556-P, Ministerio de Economía y Competitividad 01/01/2015 - 31/12/2017, IP: José Manuel Vaquero Martínez
- Estudio de la variabilidad de los sucesos de precipitación extrema en la región extremeña, IB10077, Junta de Extremadura – FEDER 30/12/2010 - 29/12/2013, IP: María Cruz Gallego Herrezuelo
- Estudio de la variabilidad de extremos de precipitación en la Península Ibérica, CGL2011-25609, Plan Nacional de I+D+i 01/01/2012 - 31/12/2012, IP: María Cruz Gallego Herrezuelo
- Avances en la reconstrucción de la actividad solar, AYA2008-04864/AYA, Ministerio de Ciencia e Innovación 2009-2011, IP: José Manuel Vaquero Martínez

C.4. Contracts, technological or transfer merits

- Academic Secretary of the Faculty of Science of the UEx from 7 April 2011 to 11 May 2015.
- Secretary of the Local Section of the Royal Spanish Society of Physics since December 2013.
- “Juan Jesús Morales” Award (6th edition) for Young Scientists (Faculty of Science, UEx, 2009).
- Member of the Observatorio Extremeño de Cambio Climático de la Junta de Extremadura since February 2021.
- 4 six-year periods of research activity recognized and 5 five-year periods of teach activity recognized.
- Director of the University Research Institute for Water, Climate Change, and Sustainability since December 2024.
- Coordinator of the 'Teaching and Dissemination in Physics Innovation Group (TeachPhys)' since July 2022.
- “Micrometeorite recovery device” Inventors: J.M. Vaquero, M.C. Gallego and I. Tovar; Application No.: ES 1 280 166 U; Priority country: Spain; Priority date: 27/10/2021; Holder entity: University of Extremadura.